A comprehensive assessment of the hazards of current use pesticides to native freshwater mussels,

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Native freshwater mussels (family Unionidae) are among the most imperiled faunal groups in North America. Numerous stressors, including pesticides, have been implicated in the widespread decline of freshwater mussels, yet the effects of pesticides on native mussels are largely unknown. Timing of pesticide application combined with the unique life history and reproductive strategy of mussels makes them susceptible to pesticide exposure at all life stages. Objectives of this study were to 1) determine the acute toxicity of technical grade pesticides to early life stages of freshwater mussels, 2) compare the acute and chronic toxicity of technical grade pesticides to early life stages of freshwater mussels with acute and chronic toxicity of pesticide formulations, and 3) determine the toxicity of pesticide formulations to adult mussels. We performed 73 standardized acute (glochidia, juveniles) and 15 chronic (juveniles, adults) toxicity tests with current use technical grade herbicides, insecticides, fungicides and commercial herbicide and insecticide formulations. Survival (acute and chronic tests) and growth (chronic tests) were assessed. Exposure concentrations of test chemicals were verified in water samples from at least 3 pesticide treatment levels in each toxicity test. A total of 7 species of glochidia, 4 species of juveniles, and 1 species of adults were tested; not all pesticides were tested with each species and life stage. A summary of toxicity test results will be presented.

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